L Number	Hits	Search Text	DB	Time stamp
1	132370	(FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1	USPAT;	2004/10/06 13:56
		YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1	US-PGPUB;	
		"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1	EPO; JPO;	
	*	KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA	DERWENT;	
		near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in.	IBM_TDB	
2	2007	(SAHASHI near1 MASASHI).in.		
2	2967	((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1	USPAT;	2004/10/06 13:57
		YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1	US-PGPUB;	
		"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1	EPO; JPO;	
		KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA	DERWENT;	
		near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in.	IBM_TDB	
		(SAHASHI near1 MASASHI).in.) and (M\$1R magneto		
		magneto\$1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))		
3	112		LIODAT	000440400
١	112	(((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1	USPAT;	2004/10/06 14:01
		YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1	US-PGPUB;	
		"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1	EPO; JPO;	
		KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA	DERWENT;	
		near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in.	IBM_TDB	
•		(SAHASHI near1 MASASHI).in.) and (M\$1R magneto		
		magneto\$1resistive magneto\$1resistance G\$1M\$1R		
	20	spin\$1valve\$1 (spin adj valve))) and (conductive adj layer)		
4	26	(((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1	USPAT;	2004/10/06 14:10
		YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1	US-PGPUB;	
		"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1	EPO; JPO;	
		KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA	DERWENT;	
		near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in.	IBM_TDB	
•		(SAHASHI near1 MASASHI).in.) and (M\$1R magneto		
		magneto\$1resistive magneto\$1resistance G\$1M\$1R		
		spin\$1valve\$1 (spin adj valve))) and (conductive adj		
5	86	layer).clm. ((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1	LICDAT.	0004/40/00 44-40
١	. 00	YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1	USPAT;	2004/10/06 14:10
		"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1	US-PGPUB;	
		KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA	EPO; JPO;	
		near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in.	DERWENT;	
		(SAHASHI near1 MASASHI).in.) and (M\$1R magneto	IBM_TDB	
		magneto\$1resistive magneto\$1resistance G\$1M\$1R		
		spin\$1valve\$1 (spin adj valve))) and (conductive adj layer)) not		
		((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1		
		YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1	*	
	`	"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1		•
		KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA		
		near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in.		
		(SAHASHI near1 MASASHI).in.) and (M\$1R magneto		
		magneto\$1resistive magneto\$1resistance G\$1M\$1R		
		spin\$1valve\$1 (spin adj valve))) and (conductive adj		
		layer).clm.)		
6	6	(((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1	USPAT;	2004/10/06 14:12
		YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1	US-PGPUB;	
		"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1	EPO; JPO;	
	-	KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA	DERWENT;	
	-	near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in.	IBM_TDB	
		(SAHASHI near1 MASASHI).in.) and (M\$1R magneto	.5 5.5	
		magneto\$1resistive magneto\$1resistance G\$1M\$1R		
	ļ	spin\$1valve\$1 (spin adj valve))) and (conductive adj layer)) not		
ļ		((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1		
ĺ		YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1		
		"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1		
		KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA		
		near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in.		
		(SAHASHI near1 MASASHI).in.) and (M\$1R magneto		
	I			
		magneto\$1resistive magneto\$1resistance G\$1M\$1R		
		magneto\$1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj		

YUZO), in. (KOUI neart KATSUHIKO), in. (KAKAMURA neart "SHIN-ICHI") in. (MASAKI, HITOSHI), in. (SAMOR neart MASATOHI), in. (HASHIMOTO neart SUSUMU), in. (SAHASHI neart MASATOHI), in. (HASHIMOTO neart SUSUMU), in. (SAHASHI neart MASASHI), in.) and (M\$1R magneto magnetos fresistive magnetos fresistance (magneto adj resistive) (magneto adj resistance) (magnetos adj (nead element sensor spin spins fivalves from pagnetos fresistive) (magnetos adj laver					
"SHIN-ICHT).in. (IWASAKI, HITOSHI).in. (SAITO neart KAZUHIRO).in. (FURE neart HIROM).in. (YOSHIKAWA neart MASATOSHI).in. (HASHIMOTO neart SUSUMU).in. (SAIHASHI neart MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistive daj layer) not ((((FUKUZAWA neart HIDEAK)).in. (KAMIGUCHI neart YUZO).in. (KOUI neart KATUHIRO).in. (FUKE neart HIROM).in. (WASAKI, HITOSHI).in. (SAIHASHI neart MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistance\$1. (KAMIGUCHI neart YUZO).in. (KOUI neart KATSUHIKO).in. (MAKAMIKA neart MASATOSHI).in. (AGAITO neart XUZO).in. (KOUI neart KATSUHIKO).in. (MAKAMIKA neart "SHINI-CHI").in. (WASAKI, HITOSHI).in. (KATO neart XUZO).in. (KOUI neart KATSUHIKO).in. (MAKAMIKA neart MASATOSHI).in. (MASTO neart XUZO).in. (KOUI neart KATSUHIKO).in. (MAKAMIKA neart MASATOSHI).in. (MASTO neart XUZO).in.) (MAKAMIKA neart MASATOSHI).in.) and (MSTO neart XUZO).in.) (MAKAMIKA neart XUZO).in.) and (matel adj layer). (MXITOSHI).in. (MATO neart XUZO).in.) (MXITOSHI).in. (MXITOSHI).in. (MXITOSHI).in. (MXITOSHI	7	80	(((() - · · · · · · · · · · · · · · · · · ·		2004/10/06 14:21
RAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in.) and (M\$1R magneto magneto\$1 tresistive magneto\$1 tresistore magneto\$1 tresistore magneto\$1 tresistore (KMBGUCH near1 MYUZO).in. (KOUL near1 KATSUHIKO).in. (KAKAMUKA near1 YUZO).in. (KOUL near1 KATSUHIKO).in. (KAKAMUKA near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in.) and (M\$1R magneto magneto\$1 tresistore magneto\$1 tresistore magneto\$1 tresistore magneto\$1 tresistore magneto\$1 tresistore. (KAMIGUCH near1 HUZO).in. (KOUL near1 KATSUHIKO).in. (KAMMUKA near1 MASASHI).in.) and (M\$1R magneto magneto\$1 tresistore. SIMIS1R spin\$1valve\$1 (spin adj valve).) (KOUL near1 KATSUHIKO).in. (KAMMUKA near1 MASASHI).in.) and (M\$1R magneto magneto\$1 tresistore. SIMIS1R spin\$1valve\$1 (spin adj valve).) and (conductive adj layer) not ((((FUKUZAWA near1 MASATOSHI).in.) and (M\$1R magneto magneto\$1 tresistore magneto\$1 tresistore magneto\$1 tresistore. SIMI\$1R spin\$1valve\$1 (spin adj valve).) and (conductive adj layer) not ((((FUKUZAWA near1 MASATOSHI).in.) and (M\$1R spin\$1valve\$1 (spin adj valve).) and (conductive adj layer). ((((FUKUZAWA near1 HIDEAK)in. (KAMIGUCH near1 TYUZO).in. (KOUL near1 KATSUHIKO).in. (NAKAMURA near1 YUZO).in. (KOUL near1 KATSUHIKO).in			TUZU).In. (KUUI neari KATSUHIKU).In. (NAKAMURA neari	1	
nearf MASATOSHI).in. (HASHIMOTO nearf SUSUMU).in. (SAHASHI nearf MASASHI) in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistive daj layer)) not ((((FUKUZAWA nearf HIDEAKI).in. (KAMIGUCHI nearf YUZO).in. (KOUI nearf KATUHIRO).in. (FUKE nearf HIROM).in. (NAMIGUCHI nearf YUZO).in. (KOUI nearf KATUHIRO).in. (FUKE nearf HIROM).in. (YOSHIKAWA nearf MASATOSHI).in. (HASHIMOTO nearf SUSUMU).in. (SAHASHI nearf MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1 mag			"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1		
(SAHASHI near1 MASASHI),in) and (M\$TR magneto magneto\$Tresistive magne				DERWENT;	
magnetoSfresistive magnetoSfresistance GSfMS1R spinSfrabveSfs(spin adj valve)) and (conductive adj layer)) not ((((FUKUZAWA near1 HIDEAKI),in. (KAMIGUCHI near1 YUZO)in. (KOUI near1 KATSUHKO)in. (NAKAMURA near1 "SHIN-ICHI") in. ((IWASAKI, HITOSHI) in. (SAITO near1 KAZUHIRO) in. (FUKE near1 HIROM) in. (YOSHIKAWA near1 MASATOSHI) in. (HASHIMOTO near1 SUSUMU) in. (SAHASHII near1 MASASHI) in.) and ((MS1R magneto magnetoSfresistive magnetoSfresistance GS1MS1R spinSfrawakesf (spin adj valve)) and (conductive adj layer) clm)) not (((((FUKUZAWA near1 HIDEAKI) in. (KAMIGUCHI near1 YUZO) in. (KOUI near1 KATSUHIKO) in. (NAKAMURA near1 MASATOSHI) in. (HASHIMOTO near1 SUSUMU) in. (SAHASHI near1 MASASHI) in.) and (MS1R magneto magnetoSfresistive magnetoSfresistance GS1MS1R spinSfrawakesf (spin adj valve)) and (conductive adj layer) not ((((FUKUZAWA near1 HIDEAKI) in. (KAMIGUCHI near1 YUZO) in. (KOUI near1 KATSUHIKO) in. (NAKAMURA near1 YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMIGUCHI near1 YUZO) in. (VOUI near1 KATSUHIK			near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in.	IBM TDB	
spin\$1valve\$1 (spin ad yaven)) and (conductive adj layer)) not ((((FULVZAWA near1 HIDEAK)).in., (KAMIGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in. ((NAKAMURA near1 KAZUHIKO).in. ((NAKAMURA near1 KAZUHIKO).in. ((NAKAMURA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. ((SAHASHI near1 MASATOSHI).in.) and ((M\$1R magneto magneto\$1 resistive ma			(SAHASHI near1 MASASHI).in.) and (M\$1R magneto	_	
spin\$1valve\$1 (spin ad yaven)) and (conductive adj layer)) not ((((FULVZAWA near1 HIDEAK)).in., (KAMIGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in. ((NAKAMURA near1 KAZUHIKO).in. ((NAKAMURA near1 KAZUHIKO).in. ((NAKAMURA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. ((SAHASHI near1 MASATOSHI).in.) and ((M\$1R magneto magneto\$1 resistive ma	-				
\((((FUKUZAWA near1 HIDEAKI), in. (()AMMURA near1 \text{VUZO), in. (KOUI near1 KATSUHIKO) in. (()AKMURA near1 \text{"SHIN-ICHI"), in. (()WASAKI, HITOSHI), in. (SAITO near1 \text{KAZUHIRO) in. (()HKE near1 HIROM), in. (()SHIKAWA \text{ near1 MASATOSHI), in. (HASHIMOTO near1 SUSUMU), in. \text{ (SAHASHI near1 MASASHI), in. and (()MS1R magneto \text{ magneto5 fresistive magneto5 fresistence GS1M\$1R \text{ spin5 twake51 (spin adj valve)}) and (conductive adj \text{ layer, olm.)} not ((((((FUKUZAWA near1 HIDEAKI), in. \text{ (KAMGUCH near1 YUZO) in. (KOUI near1 KATSUHIKO), in. \text{ (()AKAMURA near1 MASATOSHI) in. (HASHIMOTO near1 \text{ SUSUMU), in. (SAHASHI near1 MASASHI) in.) and (M\$1R \text{ magneto magneto5 fresistive magneto5 fresistance G\$1M\$1R \text{ magneto magneto5 fresistive magneto5 fresistance (35 MM\$1R \text{ spin5 twake51 (spin adj valve)}) and (conductive adj layer) not. \(((((FUKUZAWA near1 HIDEAKI)) in. (KAMGUCH near1 YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGUCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGUCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGUCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGUCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGUCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGUCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGUCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGULCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGUCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGULCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGULCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGULCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGULCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGULCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGULCH near1 \text{ YUZO) in. (KOUI near1 KATSUHIKO) in. (VAMGULCH near1 \text{ YUZO) in. (VAMA near1 HIDEAKI) in. (KAMGULCH near1 \text{ YUZO) in. (VAMA near1 KATSUHIKO) in. (VAMGULCH near1 \text{ YUZO) in. (VAMA near1 K					
YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 "SHIN-ICHI").in. (WASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1 resistive magneto\$1 resistive and islaver).clm.) not (((((CHUKUZWAW near1 HIDEAKI).in.) (KAMIGUCH near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (KAMIGUCH near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (KAMIGUCH near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (KAMIGUCH near1 KYINI-ICHI).in. ((WASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAIASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1 resistive magneto\$1 resistance (31 M\$1R spin\$1 valve\$1 (spin ad) valve)) and (conductive ad) layer).ont ((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in. ((NAKAMURA near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (VOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and ((sonductive ad) layer).om.)) and (metal ad) layer).clm.) 8 2 6 609476 (M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1 resistive magneto\$1 resistance (magneto ad) resistance) (magnetic ad) (head element sensor spin spin\$1 valve\$1 apparatus))).it.jab.clm.) and ((conductive ad) layer).om.)) and (metal ad) layer).clm.) 10 8639 ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1 resistive magneto\$1 resistance (magneto ad) resistive) (magneto ad) resistance) (magnetic ad) (head element sensor spin spin\$1 valve\$1 apparatus))).it.jab.clm.) and ((conductive meta) ad] layer) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1 resistive magneto\$1 resistance (magneto ad) resistive) (magneto ad) resistance) (magnetic ad) (head element sensor spin spin\$1 valve\$1 apparatus))), it.jab.clm.) and ((conductive meta) ad] layer) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1 resistive magneto\$1 resistance (magneto ad) resistance) (magnetic ad) (head element sensor spin spin\$1 valve\$1 apparatus))), it.jab.clm.) a				,	
"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1 KAZUHRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer).clm.)) not (((((((IWLZWAWA near1 HIDEAKI).in. (KAMIGUCHI near1 VUZO).in. (YOUI near1 KATSUHIKO).in. (YOSHIKAWA near1 "SHIN-ICHI").in. (WASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MSASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer)) not ((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in.) and (M\$1R magneto 1 (((IWEXIZAWA near1 HIDEAKI).in. (VASHIKAWA near1 MASASHI).in.) and (M\$1R magneto 1 (((IWEXIZAWA near1 HIDEAKI).in. (YOSHIKAWA near1 MASASHI).in.) and (M\$1R magneto 1 (((IWEXIZAWA near1 HIDEAKI).in. (YOSHIKAWA near1 MASASHI).in.) and (M\$1R magneto 1 (((IWEXIZAWA near1 HIDEAKI).in. (YOSHIKAWA near1 MASASHI).in.) and (M\$1R magneto 1 (((IWEXIZAWA near1 HIDEAKI).in. (YOSHIKAWA near1 MASASHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto 1 ((IWEXIZAWA near1 HIDEAKI).in. (YOSHIKAWA near1 MASATOSHIM.) ((IWASKI, HITOSHI).in. (YOSHIKAWA near1 MASATOSHIM.) ((IWASTIR TSIMSTI T near). 1 ((IWEXIZAWA near1 HIDEAKI).in. (YOSHIKAWA near1 MASASHIM.) ((IWEXIXAWA near1 MASASHIM.) ((IWASTIR TSIMSTI T near). 1 ((IWEXIX G\$1M\$1R T\$1M\$1R T\$1M\$1 J magneto\$1 resistive magneto\$1 resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1 valve\$1 apparatus)).it. ab.clm.) and ((conductive metal) adj layer). 1 ((IWEXIR G\$1M\$1R T\$1M\$1R T\$1M\$1 J magneto\$1 resistive magneto\$1 resistance (magneto adj resistive) (magneto adj resistance) (magneto adj resistive) (VITO) in (KOUII poort KATSULIKO) in (NAKAMUDA poort		
KAZUHIRO), in. (FUKE near1 HIROMI), in. (YOSHIKAWA near1 MASATOSHI), in. (HASHIMOTO near1 SUSUMU), in. (SAHASHI near1 MASASHI), in.) and (M\$1R magneto magneto\$1resistive magneto\$1ftesistive magneto\$1ftesi					
near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistence G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer).clm.) not ((((((E\u00bbCVZAWA near1 HIDEAKI).in. (KAMIGUCH near1 YUZO).in. (KOUI near1 KATSUHKO).in. (KAMIGUCH near1 YUZO).in. (KOUI near1 KATSUHKO).in. (SAITO near1 KAZUHRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in.) and (M\$1R magneto magneto s1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer)) not ((((E\u00bbCVLZAWA) near1 HIDEAKI).in. (KAMIGUCH) near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (KAMIGUCH) near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKGAMURA near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistive sitssitone (SiM\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer),clm.)) and (metal adj layer).clm.) 8 2 2 (M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistive magneto\$1 resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).it.ab.clm.) and ((conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistience (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).it.ab.clm.) and ((conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistience (magneto adj resistive) (magneto adj resistance) (magneto adj resistive) (magneto					
(SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistive magneto\$1 (((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1 YLZO).in. (KOUI near1 KATSUHIKO).in. ((NAKAMURA near1 MASATOSHI).in.) ((WASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASATOSHI).in. (HASHIMOTO near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (KAMIGUCHI near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in.) and (M\$1R magneto magneto\$1 resistive magneto\$1 resistance (magneto adj resistive) (magneto adj resistance) (magneto adj resistive) (magneto adj resistance) (magneto adj resistive) (magn		i	KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA		
magneto\$fresistive magneto\$fresistance G\$fM\$fR spin\$fvalve\$f (spin ad yalve)) and (conductive adj layer).clm) not (((((FUKUZWA near1 HIDEAKI).in. (KAKMGUCH near1 YLZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 "SHIN-ICHI").in. ((WASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASASHI).in.) and (M\$fR magneto magneto\$fresistive magneto\$fresistance G\$fM\$fR spin\$fvalve\$f (spin adj valve))) and (conductive adj layer)) not ((((FUKUZWAW near1 HIDEAKI).in. (KAMGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in.) (NAKAMURA near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 YALVE).in. (KHOLI near1 HIDEAKI).in. (KAMGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASASTOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$ff R magneto magneto\$fresistive magneto\$fresistance G\$fM\$fR spin\$fvalve\$f (spin adj valve)). and (conductive adj layer).clm).) and (metal adj layer).clm.) 8 2 6 609476 (M\$fr G\$fM\$fr T\$fM\$fr T\$			near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in.		
spin\$1valve\$1 (spin adj valve))) and (conductive adj layer) clm.)) not ((((((FUKUZAWA near1 HIDEAKD).in. (KAMIGUCHI near1 YLZO).in. (KOUI near1 KATSUHIKO).in. (KAMIGUCHI near1 YSHIN-ICHI').in. ((WASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistive of (((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 "SHIN-ICHI').in. (((WASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 MISASHI).in. (HASHIMOTO near1 KAZUHIRO).in. (IMSAITO near				İ	
layer).clm.)) not ((((((FUKUZAWA near1 HIDEAKI).in (KAMGUCH near1 YUZO).in. (KOUI near1 KATSUHIKO).in. ((NAKAMURG).clm.ear1 YUZO).in. (KOUI near1 KATSUHIKO).in. (YOSHIKAWA near1 MASATOSHI).in. (IWASAKI, HITOSHI).in. ((M\$TR magneto magneto\$1 resistive magneto\$1 resistive magneto\$1 resistive magneto\$1 resistive (((((FUKUZAWA near1 HIDEAKI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$TR spin\$1 valve\$1 (spin adj valve)) and (conductive adj layer)) not (((((FUKUZAWA near1 HIDEAKI).in. (KAMURA near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 YUZO).in. ((MVSAKI, HITOSHI).in. (SAITO near1 YUZO).in. ((MVSAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASASHI).in.) and (M\$TR magneto magneto\$1 resistive (magneto adj resistive)					
layer).clm.)) not ((((((FUKUZAWA near1 HIDEAKI).in (KAMGUCH near1 YUZO).in. (KOUI near1 KATSUHIKO).in. ((NAKAMURG).clm.ear1 YUZO).in. (KOUI near1 KATSUHIKO).in. (YOSHIKAWA near1 MASATOSHI).in. (IWASAKI, HITOSHI).in. ((M\$TR magneto magneto\$1 resistive magneto\$1 resistive magneto\$1 resistive magneto\$1 resistive (((((FUKUZAWA near1 HIDEAKI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$TR spin\$1 valve\$1 (spin adj valve)) and (conductive adj layer)) not (((((FUKUZAWA near1 HIDEAKI).in. (KAMURA near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 YUZO).in. ((MVSAKI, HITOSHI).in. (SAITO near1 YUZO).in. ((MVSAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASASHI).in.) and (M\$TR magneto magneto\$1 resistive (magneto adj resistive)			spin\$1valve\$1 (spin adj valve))) and (conductive adj		
(KAMIGUCHI near1 YUZO).in. (KOUI near1 KATSÜHIKO).in. (KAKAMURA near1 SHIN-CHIP).in. (IVASAKI, HITOSHI).in. (KAKAMURA near1 MASATOSHI).in. (SAITO near1 KAZUHIRO) in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASATOSHI).in.) and (MS1R magneto magneto\$1resistive magneto\$1resistive consistive magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus)), it, ab, clm.) and ((conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj res					*
(NAKAMURA neart "SHIN-ICHI").in. (IVIXE neart HIROMI).in. (SAITO neart KAZUHIRO).in. (FUKE neart HIROMI).in. (YOSHIKAWA neart MASATOSHI).in. (HASHIMOTO neart SUSUMU).in. (SAHASHI neart MASASHI).in.) and (M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer)) not ((((FUKUZAWA neart HIROKA)).in. (KAKAMURA neart YUZO).in. (KOUI neart KATSUHIKO).in. (NAKAMURA neart "SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAHASHI neart MASASTI).in.) and (M\$1R magneto magnetos\$1resistive magnetos\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus)), it, ab., clm.) and ((conductive metal) adj layer) (IW\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magnetos\$1resistive magnetos\$1resistance (magneto adj resistive) (magneto adj resisti					
(SAITO near1 KAZUHIRO),in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASACSHI) in.) AIRASHIMONI near1 SUSUMU),in. (SAHASHI near1 MASASHI) in.) and (M\$1R magneto magneto\$1 resistive magneto\$1 resistive aight alwey) and (conductive aight alwey) not ((((FUKUZAWA near1 HIDEAKI) in. (KAMMIGUCHI near1 YUZO),in. (KOUI near1 KATSUHIKO) in. (KAKAMURA near1 YUZO),in. (KOUI near1 KATSUHIKO) in. (KAKAMURA near1 "SHINI-ICHI") in. (FUKE near1 HIROM) in. (YOSHIKAWA near1 MASATOSHI) in. (FUKE near1 HIROM) in. (YOSHIKAWA near1 MASATOSHI) in. (FUKE near1 HIROM) in. (YOSHIKAWA near1 MASATOSHI) in. (HASHIMOTO near1 SUSUMU) in. (SAHASHI near1 MASATOSHI) in. (FUKE near1 HIROM) in. (YOSHIKAWA near1 magneto\$1 resistance (magneto ad1 resistive) (magneto ad1 resistance) (magnetic ad1 (nead element sensor spin spin\$1 valve\$1 apparatus))) ii. ab. clm.) and (Conductive metal) ad1 layer) 13 8708 ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1 resistive magneto\$1 resistance) (magnetic ad1 finead element sensor spin spin\$1 valve\$1 apparatus))) ii. ab. clm.) and (Conductive metal) ad1 layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1 resistive magneto\$1 resistance) (magnetic ad1 finead element sensor spin spin\$1 valve\$1 apparatus))) ii. ab. clm.) and (Conductive metal) ad1			(NAKAMURA near1 "SHINLICHI") in (IW/ASAKI HITOSHI) in		
(YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTÓ near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1 magneto			(SAITO pearl KATI IHIDO) in (FIIKE pearl HIDOMI) in		
SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (MS1R magneto magneto\$1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer)) not ((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in. ((NAKMURA near1 KAZUHIKO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer).clm.) and (metal adj layer).clm.) (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj re					
magneto magnetos fresistive magneto\$1resistance G\$1M\$1R spin81valve\$1 (spin adj valve))) and (conductive adj layer)) not (((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 "SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAIHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistance G\$1M\$1R spin81valve\$1 (spin adj valve)) and (conductive adj layer).clm.)) and (metal adj layer).clm.) 9					
spin\$fvalve\$1 (spin adj valve)) and (conductive adj layer)) not ((((FUKUZAWA near1 HIDEAK)).in. (KAMIGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 SHIN-ICHI").in. ((IWASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$fresistive magneto\$fresistive magneto\$fresistive magnetosfresistive magnetosfresistive magnetosfresistive magnetosfresistive magnetosfresistance (magneto adj resistive) (magneto) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$fresistive magneto\$fresistance (magneto adj resistive) (magneto adj resistive) (magneto) adj resistance) (magneto) adj resistive) (m		1.	SUSUMU).In. (SAHASHI near1 MASASHI).In.) and (M\$1R		
((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1 YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 "SHIN-ICHI").in. ((WASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistive magneto\$1resistive magneto\$1resistive magneto\$1resistive magneto\$1 (conductive adj layer).clm.) and (metal adj layer).clm.) (M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$conductive metal) adj layer) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistive magneto\$1resistore (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$conductive metal) adj layer) (((M\$1R G\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistive magneto\$1resistive magneto\$1resistive magneto\$1resistive magneto\$1 adj layer) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1 adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1 esistive) DERWENT; IBM_TDB usparatus)).ti,ab,clm.) and ((conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1 esistive) DERWENT; IBM_TDB	,		magneto magneto\$1resistive magneto\$1resistance G\$1M\$1R		
YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1 "SHINI-CHI"):in. (IWASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (AIM (M\$1R Wagneto magneto\$1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer).clm.) 8 2 2 638899.pn. 9 609476 (M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magneto adj resistive) (magneto adj resistive) (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm. 10 8639 ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$\$Conductive metal) adj layer) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1 apparatus))).ti,ab,clm.) and (\$\$Conductive metal) adj layer) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1 adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$\$Conductive metal) adj layer) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1 resistive) (magneto adj resistance) (magneto adj resistive) (magneto adj (head element sensor spin spin\$1valve\$1 apparatus)), ti,ab,clm.) ti,ab,clm.) ti,ab,clm.) ti,ab,clm.) ti,ab,clm.) ti,ab,clm.			spin\$1valve\$1 (spin adj valve))) and (conductive adj layer)) not		
"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1 KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto fresistive magneto fresistance (magneto adj resistive) (magneto adj resistance) (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus)).ti,ab,clm.) and ((conductive metal) adj layer) 10 8639 ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus)).ti,ab,clm.) and ((conductive metal) adj layer) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj (head element sensor spin spin\$1valve\$1 apparatus))), it,ab,clm.)			((((FUKUZAWA near1 HIDEAKI).in. (KAMIGUCHI near1		
KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer).clm.)) and (metal adj layer).clm.) 8 2 6338899.pn. USPAT; US-PGPUB; EPO, JPO, DERWENT; IBM, TDB USPAT; US-PGPUB; resistance (magneto adj resistive) (magneto adj resistance) (magneto adj resistive) (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1 resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1 resistive unagneto\$1 resistive) (magneto adj resist			YUZO).in. (KOUI near1 KATSUHIKO).in. (NAKAMURA near1		
KAZUHIRO).in. (FUKE near1 HIROMI).in. (YOSHIKAWA near1 MASATOSHI).in. (HASHIMOTO near1 SUSUMU).in. (SAHASHI near1 MASASHI).in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer).clm.)) and (metal adj layer).clm.) 8 2 6338899.pn. USPAT; US-PGPUB; EPO, JPO, DERWENT; IBM, TDB USPAT; US-PGPUB; resistance (magneto adj resistive) (magneto adj resistance) (magneto adj resistive) (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1 resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$conductive metal) adj layer) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1 resistive unagneto\$1 resistive) (magneto adj resist			"SHIN-ICHI").in. (IWASAKI, HITOSHI).in. (SAITO near1		
			KAZUHIRO), in. (FUKE near1 HIROMI), in. (YOSHIKAWA		1
(SAHASHI near1 MASASHI), in.) and (M\$1R magneto magneto\$1resistive magneto\$1resistance G\$1M\$1R spin\$1valve\$1 (spin adj valve))) and (conductive adj layer), clm.)) and (metal adj layer).clm.) 9 609476 (M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm. 10 8639 ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto a					
### Record ### R			(SAHASHI near1 MASASHI) in) and (M\$1P magnete		
Spin\$1valve\$1 (spin adj valve))) and (conductive adj layer).clm.)) and (metal adj layer).clm.) 6338899.pn. USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT; ISM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT; ISM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT; ISM_TDB USPAT; US-PGPUB; EPO; JPO; JPO; DERWENT;					
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magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.)		[spirit (valves apparatus))).ti,ab,clm.) and ((conductive metal)		
resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.)			adj layer)) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J	IBM_TDB	
resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.)			magneto\$1resistive magneto\$1resistance (magneto adj		
element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.)			resistive) (magneto adj resistance) (magnetic adj (head		Į
and (\$conductivity adj layer))			element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.)		
			and (\$conductivity adj layer))		

15 16 17	173	((((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((conductive metal) adj layer)) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$conductivity adj layer))) and (shield and gap) (((((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((conductive metal) adj layer)) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magneto adj resistive) (magneto adj resistance) (magneto adj resistance) (magneto adj resistance) (magneto\$1resistive magneto\$1resistive magneto\$1resistive) (magneto adj resistance) (magneto adj resistance) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (synthetic adj pinned) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (synthetic adj pinned) ((m\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT;	2004/10/06 14:31
16 17 18	39	resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$conductivity adj layer))) and (shield and gap) (((((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((conductive metal) adj layer)) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$conductivity adj layer))) and (shield and gap)) and @PY<1999 ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (synthetic adj pinned) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj	US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT;	
16 17 18	39	(((((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((conductive metal) adj layer)) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (\$conductivity adj layer))) and (shield and gap)) and @PY<1999 ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (synthetic adj pinned) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj	US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT;	
17		((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (synthetic adj pinned) ((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj	US-PGPUB; EPO; JPO; DERWENT; IBM_TDB USPAT;	2004/10/06 14:39
18	8521	((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj	USPAT;	1
	1	spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((pinned reference fixed) same (anti\$1ferro\$1magnetic\$coupl\$3 synthetic Ru ruthenium coupling anti\$1parallel (anti adj parallel) AFC))	US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/10/06 14:39
19	171	((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (synthetic adj (magnetic fixed reference sense sensing free pinned))	USPAT; US-PGPUB; EPO; JPO; DERWENT;	2004/10/06 14:41
	8575	(((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((pinned reference fixed) same (anti\$1ferro\$1magnetic\$coupl\$3 synthetic Ru ruthenium coupling anti\$1parallel (anti adj parallel) AFC))) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (synthetic adj (magnetic fixed reference sense sensing free pinned)))	IBM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/10/06 14:41
20	1075	((((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((pinned reference fixed) same (anti\$1ferro\$1magnetic\$coupl\$3 synthetic Ru ruthenium coupling anti\$1parallel (anti adj parallel) AFC))) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and (synthetic adj (magnetic fixed reference sense sensing free pinned)))) and ((((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistance (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((conductive metal) adj layer)) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive magneto\$1resistive (magneto adj resistance) (magneto adj resistive) (magneto adj resistive) (magneto adj resistive) (magneto adj resistive) (magneto adj resistance) (magnetic adj (head element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/10/06 14:58

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21	87	(((((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive	USPAT;	2004/10/06 15:27
1	,	magneto\$1resistance (magneto adj resistive) (magneto adj	US-PGPUB;	
		resistance) (magnetic adj (head element sensor spin	EPO; JPO;	
		spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((pinned reference	DERWENT;	
		fixed) same (anti\$1ferro\$1magnetic\$coupl\$3 synthetic Ru	IBM_TDB	
		ruthenium coupling anti\$1parallel (anti adj parallel) AFC)))	-	
		(((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive		
		magneto\$1resistance (magneto adj resistive) (magneto adj		
		resistance) (magnetic adj (head element sensor spin		
		spin\$1valve\$1 apparatus))).ti,ab,clm.) and (synthetic adj		
		(magnetic fixed reference sense sensing free pinned)))) and		
		((((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive		
		magneto\$1resistance (magneto adj resistive) (magneto adj		
		resistance) (magnetic adj (head element sensor spin		
		spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((conductive metal)		
		adj layer)) (((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J		
		magneto\$1resistive magneto\$1resistance (magneto adj	i	
		resistive) (magneto adj resistance) (magnetic adj (head		
		element sensor spin spin\$1valve\$1 apparatus))).ti,ab,clm.)		
00		and (\$conductivity adj layer)))) and @PY<1999		
22	51	((M\$1R G\$1M\$1R T\$1M\$1R T\$1M\$1J magneto\$1resistive	USPAT;	2004/10/06 15:40
		magneto\$1resistance (magneto adj resistive) (magneto adj	US-PGPUB;	
		resistance) (magnetic adj (head element sensor spin	EPO; JPO;	
	İ	spin\$1valve\$1 apparatus))).ti,ab,clm.) and ((roughness	DERWENT;	
00		R?sub.a) near4 gap)	IBM_TDB	
23	2	("5278716" "4789910").pn.	USPAT	2004/10/06 15:41
24	7	("5843589" "5748399" "5701223" "5701222" "5583725"	USPAT	2004/10/06 15:44
		"5465185" "5408377").pn.		